AMENDMENTS TO THE CLAIMS

IN THE CLAIMS:

• **Please amend the claims as follows.**

1. (Currently Amended): ~~A density meter~~An apparatus for determining the density of at least one fluid within a pipe, ~~said~~the density meter comprising:

a first sound speed meter positioned at a first sensing region along ~~said~~the pipe which provides a first system effective sound speed signal;

a second sound speed meter positioned at a second sensing region along ~~said~~the pipe which provides a second system effective sound speed signal;

a signal processor, responsive to ~~said~~the first and ~~said~~the second system sound speed signals, which provides a density signal indicative of ~~said~~the density of ~~said~~the fluid within the pipe, and

wherein the first sensing region has a first compliance and wherein the second sensing region has a second compliance and wherein the first and second compliances are different.

2. (Currently Amended): The apparatus of claim 1, wherein ~~said~~the first sensing region has a first cross sectional compliance and wherein ~~said~~the second sensing region has a second cross sectional compliance and wherein ~~said~~the ~~first~~ cross sectional compliances ~~is~~ are substantially different. ~~from said second cross sectional compliance.~~

3. (Canceled).

4. (Currently Amended): The apparatus of claim 1, further comprising a concentric shell positioned around each of ~~said~~the first and ~~said~~the second sound speed meters thereby isolating ~~said~~the first and ~~said~~the second sound speed meters from an outside environment.

5. (Currently Amended): The apparatus of claim 1, wherein ~~said~~the first and ~~said~~the second sound speed meters determine ~~said~~the first and ~~said~~ second system effective sound speeds signals from one-dimensional acoustic pressure waves traveling along ~~said~~the pipe.

6. (Currently Amended): The apparatus of claim 1, wherein ~~said~~at least one of ~~said~~the first and ~~said~~the second sound speed meters comprises a fiber optic based sound speed meter.

7. (Currently Amended): The apparatus of claim 2, wherein ~~said~~the first or ~~said~~the second sensing region of ~~said~~the pipe comprises a non-circular cross sectional geometry.

8. (Currently Amended): The apparatus of claim 7, wherein ~~said~~the non-circular cross sectional geometry comprises an oval shape.

9. (Currently Amended): The apparatus of claim 2, further comprising an input line positioned between ~~said~~the first and ~~said~~the second sensing regions to provide a ~~known quantity of a known~~ substance into ~~said~~the fluid.

10. (Currently Amended): A method for measuring the density of a fluid within a pipe, the method comprising:

a) measuring a first effective system sound speed at a first sensing region with a first compliance along ~~said~~the pipe and providing a first effective system sound speed signal;

b) measuring ~~said~~ a second effective system sound speed at a second sensing region with a second compliance different from the first compliance along ~~said~~the pipe and providing a second effective system sound speed signal; and

c) calculating ~~said~~the density using ~~said~~the first and ~~said~~the second effective system sound speed signals.

11. (Currently Amended): The method of claim 10, wherein ~~said~~the calculating step (c) comprises:

d) subtracting ~~said~~the first and ~~said~~the second effective system sound speeds signals to obtain a difference related to a compliance difference between ~~said~~the ~~two~~ first and second sensing regions.

12. (Currently Amended): The method of claim 10, wherein ~~said~~the measuring steps (a) and (b) comprise measuring a propagation velocity of a one-dimensional acoustic pressure wave traveling ~~along said pipe~~through the fluid.

13. (Currently Amended): The method of claim 10, wherein ~~said~~the step of measuring ~~said~~the first and ~~said~~the second effective system sound speeds comprises measuring a strain of the pipe.

14. (New): The apparatus of claim 1, further comprising a tube positioned along either the first sensing region or the second sensing region and within a flow path of the fluid within the pipe.

15. (New): An apparatus for determining the density of at least one fluid within a pipe, the density meter comprising:

a first meter positioned at a first sensing region along the pipe;

a second meter positioned at a second sensing region along the pipe;

a signal processor, responsive to signals from the first and the second meters, which provides a density signal indicative of the density of the fluid within the pipe; and

wherein the first sensing region has a first compliance and wherein the second sensing region has a second compliance and wherein the first and second compliances are different.

16. (New): The apparatus of claim 15, wherein the first sensing region has a first cross sectional compliance and wherein the second sensing region has a second cross sectional compliance and wherein the cross sectional compliances are substantially different.

17. (New): The apparatus of claim 15, wherein the first and the second sound speed meters determine the first and second system effective sound speed signals from one-dimensional acoustic pressure waves traveling along the pipe.

18. (New): The apparatus of claim 15, wherein the at least one of the first and the second sound speed meters comprises a fiber optic based sound speed meter.

19. (New): The apparatus of claim 15, wherein the first or the second sensing region of the pipe comprises a non-circular cross sectional geometry.

20. (New): The apparatus of claim 15, further comprising an input line positioned between the first and the second sensing regions to provide a substance into the fluid.

21. (New): The apparatus of claim 15, further comprising a tube positioned along either the first sensing region or the second sensing region and within a flow path of the fluid within the pipe.

22. (New): A method for measuring the density of a fluid within a pipe, the method comprising:

a) measuring a first parameter at a first sensing region with a first compliance along the pipe;

b) measuring a second parameter at a second sensing region with a second compliance different from the first compliance along the pipe; and

c) calculating the density of the fluid using the first and the second parameters.

23. (New): The method of claim 22, wherein the calculating step (c) comprises:

d) subtracting the first and the second effective system sound speed signals to obtain a difference related to a compliance difference between the first and second sensing regions.

24. (New): The method of claim 22, wherein the measuring steps (a) and (b) comprise measuring a propagation velocity of a one-dimensional acoustic pressure wave traveling through the fluid.

25. (New): The method of claim 22, wherein the measuring step (a) and (b) comprise measuring a strain of the pipe.